

## Miniature Laser Magnetometer (MLM), Phase II

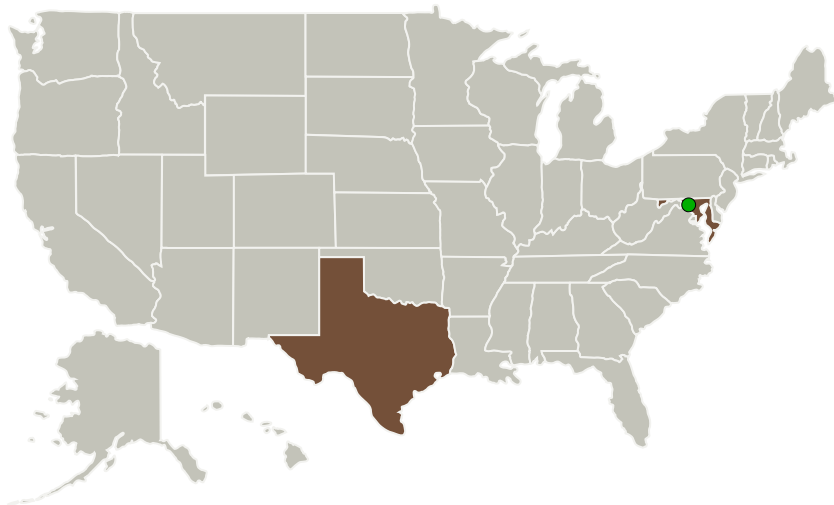
Completed Technology Project (2011 - 2013)



## Project Introduction

This 2009 NASA SBIR Phase 2 proposal for an innovative Miniature Laser Magnetometer (MLM) is a response to subtopic S1.06 Particles and Field Sensors and Instrument Enabling Technologies. The MLM instrument will incorporate a number of technical innovations to achieve high-sensitivity and high-stability performance while significantly reducing the size of the laser-pumped helium magnetometer for use on very small satellites and UAVs. The MLM design approach will trade sensitivity for miniaturization of critical components while still meeting the performance requirements for geomagnetic and space science experiments. Reduction in instrument mass, volume and power will be accomplished through innovations including new non-magnetic components, compact nested triaxial Braunk coils for vector measurements, and miniaturized packaging designs. The MLM will have a dynamic range up to 75,000 nT. The scalar sensitivity will be 5 pT/rHz with an accuracy of 0.2 nT. The vector sensitivity will be 5 pT/rHz with an accuracy of 0.5 nT. The feasibility of fabricating and demonstrating a MLM prototype in Phase 2 was established in the Phase 1 effort. The TRL is expected to be 6 at the end of the Phase 2 contract.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Polatomic, Inc.	Lead Organization	Industry	Richardson, Texas
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Texas

## Project Transitions

**June 2011:** Project Start**May 2013:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139106>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Polatomic, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

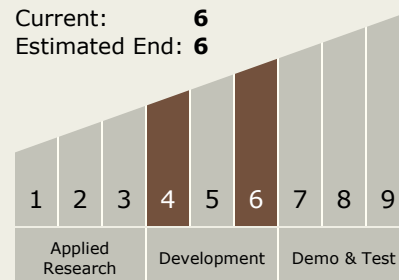
Carlos Torrez

**Principal Investigator:**

Robert Slocum

## Technology Maturity (TRL)

Start: 4  
 Current: 6  
 Estimated End: 6



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### Technology Areas

#### Primary:

- TX08 Sensors and Instruments
  - └ TX08.3 In-Situ Instruments and Sensors
    - └ TX08.3.1 Field and Particle Detectors

### Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System